Calendar No. 232

102D CONGRESS *1st Session*	SENATE	REPORT 102-157

AMERICAN TECHNOLOGY PREEMINENCE ACT OF 1991

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

R E P O R T

OF THE

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 1034

SEPTEMBER 24 (legislative day, SEPTEMBER 19), 1991.—Ordered to be printed

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SEPTEMBER 24 (legislative day, SEPTEMBER 19), 1991.—Ordered to be printed

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 1034]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 1034) to enhance the position of United States industry through the application of the results of Federal research and development, and for other purposes, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill as amended do pass.

PURPOSE OF THE BILL

The bill as reported authorizes fiscal year (FY) 1992 and 1993 appropriations for the following activities of the Department of Commerce's (DOC) Technology Administration: Office of the Under Secretary for Technology (Under Secretary); Technology Policy; Japanese Technical Literature; Clearinghouse for State and Local Initiatives on Productivity, Technology, and Innovation; National Technical Information Service (NTIS); intramural research and service activities of the National Institute of Standards and Technology (NIST); and NIST's extramural industrial technology service programs, which consist of the Regional Centers for the Transfer of Manufacturing Technology, the State Technology Extension Program (STEP), and the Advanced Technology Program (ATP). The reported bill also sets terms and conditions for assistance to industry under the ATP, makes five amendments to the Stevenson-Wydler Technology Innovation Act of 1980 (Stevenson-Wydler Act), and requires several studies and reports.

Background and Needs

The United States no longer can take its leadership in technology for granted. Other nations have concerted and successful efforts, sponsored jointly by industry and government, to develop and apply advanced commercial technologies in such fields as electronics, advanced manufacturing, and advanced materials. The United States has lost its world leadership in several areas of basic technology, and U.S. industries in a wide range of fields find themselves losing both technological leadership and market share. If these trends are allowed to continue, they will have major adverse effects on U.S. economic security, national defense, and the Nation's standard of living. The technology programs of DOC already play an important role in supporting U.S. industrial technology and can do even more to assist U.S. industrial competitiveness.

DOC Technology Programs

While the principal responsibility for developing and applying new commercial technology lies with the private sector, DOC and its Technology Administration play an important role in assisting U.S. industrial technology. The Technology Administration consists of four main groups:

Office of the Under Secretary. The Under Secretary oversees the operations of the Technology Administration, advises the Secretary and President on technology matters, and participates in interagency committees on technology policy.

Office of the Assistant Secretary for Technology Policy. The Assistant Secretary serves as senior policy analyst for the Under Secretary. The Assistant Secretary also supervises a 30-person Office of Technology Policy which analyzes technology issues; conducts business outreach activities in areas such as manufacturing, Federal technology transfer, and voluntary metric conversion; and operates the Japanese Technical Literature Program and the Clearinghouse for State and Local Initiatives in Productivity, Technology, and Innovation.

National Technical Information Service (NTIS). NTIS is a mostly self-supporting unit which collects and disseminates unclassified Federal technology reports. It also collects and translates technical reports from other countries.

National Institute of Standards and Technology. NIST is the Nation's principal R&D agency for general civilian technology. Congress created NIST's predecessor agency, the National Bureau of Standards (NBS), in 1901 as a scientific and engineering laboratory to provide industry with precise measurements, quality control techniques, and technical data. In effect, the agency provides American industry with many of the "supporting technologies" needed to make products in precise, high-quality, and cost-effective ways. It conducts work which benefits entire industries but which no one company can afford to undertake. Today, the agency remains the one Federal laboratory with an explicit mission to aid U.S. science and industry. Much of its recent laboratory research has focused on providing techniques and technical data necessary to improve manufacturing and to turn new discoveries into successful commercial products.

During the 100th Congress, the Technology Competitiveness Act (sections 5101–5164 of the Omnibus Trade and Competitiveness Act of 1988, Pub. Law 100–418)) upgraded NBS into NIST and expanded its responsibilities. Under that Act, the traditional NBS laboratory program continues, with NIST directed to conduct research which provides not only important measurement services but also, where appropriate, helps industry to develop new basic technologies.

The Technology Competitiveness Act also gave NIST two additional missions. First, the law created two new technology extension programs to help small and medium-sized manufacturers to modernize their factories and improve productivity: the Regional Centers for the Transfer of Manufacturing Technology ("Manufacturing Technology Centers"), and STEP. Five Manufacturing Technology Centers are now operating and helping small manufacturers to upgrade their technology and improve productivity and competitiveness. STEP has provided awards to State governments to help them coordinate and strengthen their technology extension programs.

Second, that Act created the ATP to assist industry-led precompetitive research and development (R&D) projects to develop new generic technologies. Generic technologies are those that promise to benefit a wide range of industries and government agencies. Precompetitive R&D lies between laboratory discoveries and inventions, on the one hand, and proprietary product development, on the other. Technical work at this stage focuses on overcoming basic engineering obstacles and barriers which threaten to slow the commercialization and production of new technologies. This type of research can be long-term and risky, yet many industries and companies may benefit from the results. For this reason, Federal support is appropriate and necessary. On March 5, 1991, DOC announced the first round of ATP awards—11 grants in such areas as electronics, optical recording, computer technology, superconductivity, and improved control of machine tools.

The administration has expressed support for NIST programs. The FY 1992 budget proposes a 21-percent increase for NIST's intramural research budget and states that the "long-term budget projection will result in a budget for NIST that is approximately doubled by 1996." The FY 1992 budget also request some funding for the Manufacturing Technology Centers and the ATP. The request for the ATP is consistent with the position taken by the Executive Office of the President in its September 1990 statement on "U.S. Technology Policy." That statement said that the following is one of the Federal Government's R&D responsibilities:

> Participate with the private sector in precompetitive research on generic, enabling technologies that have the potential to contribute to a broad range of government and commercial applications. In many cases these technologies have evolved from government-funded basic research, but technical uncertainties are not sufficiently reduced to permit assessment of full commercial potential.

THE ERODING U.S. POSITION IN CRITICAL TECHNOLOGIES

Technology is increasingly seen as the key to economic growth and a strong national defense. The President's Commission on Industrial Competitiveness concluded in 1985: "Technology propels our economy forward. Without doubt, it has been our strongest competitive advantage."

Yet America's position in both technology and the market for high-technology products continues to erode seriously. Recent reports show how far the United States is falling behind other major industrial nations. In spring 1990, for example, DOC released a report entitled "Emerging Technologies: A Survey of Technical and Economic Opportunities." The report identified 12 emerging technologies and concluded that, by the year 2000, sales of products based on those technologies would constitute a U.S. annual market of $350 billion and a world annual market approaching $1 trillion. The report then added:

> However, competition from the world's other two economic power centers, Japan and the European community (EC), is strong. If current trends continue, this study indicates that, before the year 2000, the United States could lag behind Japan in most emerging technologies and trail the EC in several of them.

The report concluded that the United States is losing, or losing badly, relative to Europe in three of the 12 technologies, holding its own in 6, and gaining in 3. It then listed the technologies in which the United States is losing, or losing badly, relative to Japan: advanced materials, biotechnology, digital imaging technology, superconductors, advanced semiconductor devices, high-density data storage, high-performance computing, medical devices and diagnostics, optoelectronics, and sensor technology. The United States is holding its own against Japan in the remaining two technologies, artificial intelligence and flexible computer-integrated manufacturing. Relative to Japan, the United States is gaining in none of the 12 key emerging technologies.

At a March 20, 1991, Committee hearing, the private Council on Competitiveness presented a report entitled "Gaining New Ground: Technology Priorities for America's Future." The report reached disturbing conclusions:

> The U.S. position in many critical technologies is slipping and, in some cases, has been lost altogether. Future trends are not encouraging. America pioneered such technologies as numerically controlled machine tools, robotics, optoelectronics and integrated circuits only to lose leadership in them to foreign competitors. Moreover, in many critical technologies, ranging from leading-edge scientific equipment to precision bearings, trends are running against the United States. * * *
>
> Foreign governments are systematically pursuing leadership in critical technologies. Governments in other major industrialized countries have used R&D incentives, public-private technology consortia, infrastructure programs, tax policy, trade policy and regulations to improve the technological competitiveness of their industries. The most successful efforts combine funding with extensive public-private collaboration. Partly

as a result of these programs, U.S. industry has lost extensive market share in many technology-intensive products (such as memory chips and machine tools) and, in some cases, entire industries (such as consumer electronics).

NATIONAL NEEDS IN TECHNOLOGY

Despite the importance of technology to the economy and national defense, and despite growing concern about America's technological position, Federal funding to support industry-led technology projects is low and remains much lower than government support in other major industrialized nations. While the Department of Defense (DOD) continues to support some "dual-use" technologies with both military and commercial applications, funding at NIST—the one Federal technology whose primary mission is to help industry—has been less than $250 million per year out of a Federal R&D budget that is now nearly $70 billion per year. By way of comparison, official Federal statistics show that in 1988 the United States Government spent 0.2 percent of its R&D budget to promote industrial development, while the German Government spent 14.5 percent of its R&D budget in this area.

While the United States need not match European and Japanese R&D investments dollar for dollar, concern has grown about the low priority that the Federal Government has placed on industrially relevant R&D. As early as 1985, the report of the President's Commission on Industrial Competitiveness concluded: "There is not enough research and development with competitiveness as its goal." The report added this point: "Manufacturing technology needs more emphasis. Perhaps the most glaring deficiency in America's technological capabilities has been our failure to devote enough attention to manufacturing or 'process' technology."

The Council on Competitiveness report, "Gaining New Ground," makes the following points about U.S. technology policy in general and NIST in particular:

> Unless the nation acts today to promote the development of generic industrial technology, its technological position will erode further, with disastrous consequences for American jobs, economic growth and national security. The federal government should view support of generic industrial technologies as a priority mission. * * *
>
> In order to promote more commercially relevant generic technologies as one of its priority R&D missions, the federal government should * * * [p]rovide adequate funding for the National Institute of Standards and Technology (NIST) Advanced Technology Program and its Manufacturing Technology Transfer Centers to give them a chance to succeed. * * * The NIST budget should be increased so that it is adequate to contribute to U.S. leadership in generic technologies.

There is, therefore, a need to strengthen the programs of DOC's Technology Administration, including NIST's intramural and extramural programs, in order to help U.S. industry to be economically strong and competitive.

Legislative History

Senator Hollings introduced S. 1034 on May 9, 1991. Senators Gore, Bentsen, Kerry, Breaux, Robb, Rockefeller, Bingaman, Exon, and Kasten are cosponsors.

This year the Full Committee held two hearings on technology and economic competitiveness: a March 20 hearing on the Council on Competitiveness report, "Gaining New Ground," and a June 19 hearing on the reauthorization of DOC technology programs and on related issues concerning manufacturing and critical technologies. Administration witnesses testified at the June 19 hearing.

On July 30, 1991, in open executive session the Committee considered an amendment in the nature of a substitute for S. 1034. The amendment was approved, and S. 1034 was ordered to be reported without objection.

Summary of Major Provisions

1. Title I would authorize, for the non-NIST portions of the Technology Administration, FY 1992 appropriations of $9,700,000 and $10,000,000 for FY 1993. It also would authorize FY 1992 NIST appropriations of $348,500,000 and $426,495,000 for FY 1993. The title also makes several changes in the law applying to NIST.

2. Title II would amend the ATP section of the NIST law.

3. Title III would make five amendments to the Stevenson-Wydler Act. Three of these amendments deal with Federal technology transfer activities.

4. Title IV would require several studies and reports, including ones on high-resolution information systems, the effects of Federal procurement policy on U.S. technology, technical information, and testing and certification.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. Congress,
Congresional Budget Office,
Washington, DC, September 10, 1991.

Hon. Ernest F. Hollings,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the attached cost estimate for S. 1034, the American Technology Preeminence Act of 1991. Enactment of S. 1034 would not affect direct spending of receipts. Therefore, pay-as-you-go procedures would not apply to the bill.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

Robert D. Reischauer,
Director.

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: S. 1034.

2. Bill title: American Technology Preeminence Act of 1991.

3. Bill status: As ordered reported by the Senate Committee on Commerce, Science and Transportation on July 30, 1991.

4. Bill Purpose: S. 1034 would authorize appropriations for fiscal years 1992 and 1993 for a number of programs administered by the Department of Commerce (DOC), and would expand a number of other activities. Specifically, the bill would: Authorize the appropriation of $9.7 million for fiscal 1992 and $10.0 million for fiscal 1993 for the Technology Administration; $211.0 million for fiscal 1992 and $241.5 million for fiscal 1993 for the National Institute for Standards and Technology (NIST); and such sums as may be necessary in each of these years for adjustments in salary, retirement, and other employee benefits that may be provided for by law; authorize the appropriation of $137.5 million for fiscal 1992 and $185 million for fiscal 1993 for NIST's extramural industrial technology services programs; authorize such sums as may be necessary for fiscal 1993 for renovating and upgrading NIST's facilities; establish a High-Resolution Information System Advisory Board to monitor and foster the development of high-resolution information systems industries based in the United States; establish a Commission on Technology and Procurement to analyze the effect of federal government procurement laws and policies on the development of advanced technologies within the United States; establish a pilot program to aid nations that have requested assistance from the United States in developing their own standards; clarify existing law by providing the National Technical Information Service specific authorization to offset operating costs through the collection of fees; and require the DOC and the Office of Science and Technology Policy to undertake a number of studies.

5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1992	1993	1994	1995	1996
Authorization levels:					
Technology administration	9.7	10.0			
NIST	211.0	241.5			
Renovations of facilities		25.0			
Other NIST programs [1]	137.5	185.0			
Salary adjustments	4.3	6.9			
Total estimated authorizations	362.5	468.4			
Estimated outlays	218.2	360.6	155.2	71.6	25.3

[1] The table contains authorizations for the regional centers for technology transfer ($25 million for fiscal 1992 and $35 million for fiscal 1993), Technology Extension Program ($2.5 million for fiscal 1992 and $10 million for fiscal 1993), and the Advanced Technology Program ($110 million for fiscal 1992 and $140 million for fiscal 1993).

The costs of this bill fall within budget function 370.

Basis of estimate: CBO assumes that the full amounts authorized will be appropriated prior to the beginning of each fiscal year. Based on information from the DOC, we estimate that the various boards, commissions, and studies required by the bill would result in no significant additional cost to the federal government. Based

on information from NIST, we expect that NIST will spend about $25 million, primarily for costs associated with architectural design, to renovate and upgrade their facilities. The increases for salary, retirement and other employee benefits that may be provided for by law for fiscal years 1992 and 1993 are estimated consistent with the CBO baseline. Outlays for existing programs are based on historical spending patterns. Outlays for new programs are based on historical spending patterns of similar programs.

6. Pay-as-you-go considerations: The Budget Enforcement Act of 1990 sets up pay-as-you-go procedures for legislation affecting direct spending or receipts through 1995. CBO estimates that enactment of S. 1034 would not affect direct spending or receipts. Therefore, pay-as-you-go procedures would not apply to the bill.

7. Estimated cost to State and local governments: None.

8. Estimate comparison: None.

9. Previous CBO estimate: None.

10. Estimate prepared by: John Webb.

11. Estimate approved by: C.G. Nuckols (for James L. Blum, Assistant Director for Budget Analysis).

Regulatory Impact Statement

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

The bill confers no new regulatory authority on NIST, the Technology Administration, or any other unit of DOC. Implementation of the legislation will not increase Federal regulation of any individuals or businesses, and thus in this respect will not result in increased Federal regulation, economic effect, impact on personal privacy, or significant additional paperwork. The Secretary will make decisions regarding applications for financial assistance under the ATP and NIST technology extension programs and will require applicants to submit certain information. However, all such business relationships will be voluntary.

In terms of paperwork, the bill requires a one-time report on NTIS, the feasibility of an NTIS electronic product catalog, NIST facilities needs, the ATP, a strategy to stimulate competitive research in States which historically have received little Federal research funding, and how DOC efforts regarding high-resolution information systems are coordinated with those of other Federal agencies; annual reports on high-resolution information systems; one interim and one final report on the effect of Federal procurement policy on U.S. technology; and a National Research Council study and report on international product testing and certification issues.

Section-by-Section Analysis

SECTION 1.—SHORT TITLE

This section states that the bill may be cited as the "American Technology Preeminence Act of 1991."

SECTION 2.—DEFINITIONS

This section defines the following terms: advanced manufacturing technology, advanced materials, high-resolution information systems, Institute, Secretary, and Under Secretary.

TITLE I—DEPARTMENT OF COMMERCE RESEARCH AND TECHNOLOGY

Sec. 101.—Short Title

This section states that the title may be cited as the "Technology Administration Authorization Act of 1991."

Sec. 102.—Statement of Policy

This section states that Congress finds that in order to help U.S. industries to speed the development of new products and processes so as to maintain the economic competitiveness of the Nation, it is necessary to strengthen the programs and activities of the Technology Administration and NIST.

Sec. 103.—Technology Administration

Subsection (a)(1) states that there are authorized to be appropriated to the Secretary to carry out the activities of the Under Secretary and the Assistant Secretary for Technology Policy, $9,700,000 for FY 1992, which shall be available for the following line items:

(A) Office of the Under Secretary, $2,000,000;

(B) Technology Policy, $3,700,000;

(C) Japanese Technical Literature, $1,500,000;

(D) Clearinghouse for State and Local Initiatives on Productivity, Technology, and Innovation, $1,000,000; and

(E) NTIS, $1,500,000, to carry out the modernization plan described in the National Technical Information Act of 1988.

Subsection (b)(1) authorizes appropriations of $10,000,000 for FY 1993, which shall be available for the following line items:

(A) Office of the Under Secretary, $2,000,000;

(B) Technology Policy, $4,000,000;

(C) Japanese Technical Literature, $1,500,000;

(D) Clearinghouse for State and Local Initiatives on Productivity, Technology, and Innovation, $1,000,000; and

(E) NTIS, $1,500,000, to carry out the modernization plan described in the National Technical Information Act of 1988.

The Committee continues to view the Technology Administration as the focal point for DOC's technology activities and DOC as the lead Federal agency in helping U.S. industry become more productive. The Committee urges the Under Secretary, the Assistant Secretary for Technology Policy, and other Technology Administration officials to continue their work to help stimulate and assist improvements in private-sector innovation, productivity, and competitiveness.

The Committee continues to support strongly the Japanese Technical Literature Program and the Clearinghouse for State and Local Initiatives on Productivity, Technology, and Innovation. The Committee also intends that any funds appropriated for these two programs pursuant to the authorizations contained in this legisla-

tion shall be used exclusively for activities under the two programs and not be transferred to pay for other operations.

Subsection (c) states that the operating costs for NTIS associated with the acquisition, processing, storage, bibliography control, and archiving of information and documents shall be recovered primarily through the collection of fees.

Subsection (d) requires that by September 30, 1992, the Secretary shall submit to Congress a report which responds to an Inspector General report regarding NTIS, includes a revised detailed modernization plan for NTIS, presents a business plan for NTIS, and certifies that NTIS has employed a chief financial officer and has begun taking reasonable steps toward strengthening its accounting system.

The Committee supports the efforts of the Under Secretary and NTIS's management to modernize NTIS equipment and operations. The Committee directs NTIS to keep the Committee informed of specific plans and financial arrangements.

Sec. 104.—National Institute of Standards and Technology

Subsection (a) states that there are authorized to be appropriated to the Secretary, to carry out NIST's intramural scientific and technical research and services activities, $211,000,000 for FY 1992. The authorization includes proposed increases for research to develop new measurement techniques, quality assurance methods, and, in some cases, new generic processing technologies in the following areas: electronics and electrical engineering, manufacturing engineering, chemical science and technology, physics, materials science and engineering, building and fire research, computer systems, applied mathematics and scientific computing, and technology assistance and services to industry.

Subsection (b) authorizes to be appropriated $241,495,000 for FY 1993 to carry out NIST's intramural scientific and technical research and services activities. In addition, such sums as may be necessary are authorized for the renovation and upgrading of NIST's facilities.

The research and technical services provided by NIST's intramural laboratory program are of great importance to the Nation and to its economic future. Precise physical standards, measurements, and quality assurance techniques are essential if American companies are to improve quality, reduce costs, and accelerate the speed with which new products are developed and manufactured. The Committee endorses the President's proposal to double the laboratory program's budget by 1996. The FY 1992 and 1993 authorization levels contained in the reported bill are consistent with the President's proposal.

For 1993 the Committee has authorized "such sums" as may be necessary for the renovation and upgrading of NIST's facilities. NIST has contracted with an architectural/engineering firm to review facilities needs at its laboratories in Gaithersburg, MD, and Boulder, CO, and those needs may be considerable. Most of the laboratories and buildings at the two NIST sites date from the 1960s and may need either repairs or upgrades that will allow them to be used for today's advanced research. The President's FY 1992 request for NIST includes $4,000,000 for facilities repair, but addi-

tional funds in FY 1993 may be required to address these facilities needs. Another section of this legislation, section 108, instructs the NIST Director to submit a report to the Committee as well as the House Committee on Science, Space, and Technology regarding facilities needs, priorities, and costs.

Subsection (c) deals with transfers. Funds may be transferred among line items, so long as the net funds transferred to or from any line item do not exceed 10 percent of the amount authorized for that line item and the Committee and the House Committee on Science, Space, and Technology are notified in advance of any such transfer.

The Secretary may propose transfers to or from any line item listed in subsection (a)(1) exceeding 10 percent of the amount authorized for such line item, but such proposed transfer may not be made unless—

(A) a full and complete explanation of any such proposed transfer and the reason therefor are transmitted in writing to the Speaker of the House of Representatives, the President of the Senate, and the appropriate authorizing Committees of the House of Representatives and the Senate; and

(B) 30 calendar days have passed following the transmission of such written explanation.

Subsection (d) states that except for authorizations provided in the Omnibus Trade and Competitiveness Act of 1988, the Earthquake Hazards Reduction Act of 1977, and the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988, this legislation contains the complete authorizations of appropriations for NIST for FY 1992 and 1993.

Subsection (e) states that the Secretary is authorized to pay the Federal share of the cost of establishing and carrying out a standards assistance pilot program under section 112 of the NIST Authorization Act for FY 1989 for the purpose of aiding nations that have requested assistance from the United States in developing their standards. As part of that program, the Secretary is authorized to work with appropriate U.S. and foreign private and public organizations. The Secretary is authorized to expend resources which match the private-sector contribution to the program.

To date, the pilot program created under section 112 of the NIST Authorization Act for FY 1989 has been used to create a successful U.S. industry-government partnership which, at the invitation of the Saudi Arabian Standards Organization (SASO), comments on proposed new national standards in the Kingdom of Saudi Arabia. Participation by Americans in this process helps ensure that the new Saudi standards are compatible with American products that U.S. firms would like to export to the Kingdom. Under the pilot program, private U.S. firms have raised funds to pay for a standards expert who works with SASO; NBIST, in turn, uses funds equal to the private funding to review SASO's proposed standards.

Subsection (f) is a technical amendment regarding the construction of facilities.

Subsection (g) states that the fire research and building technology programs of NIST may be combined for administrative purposes only, and separate budget accounts for fire research and building technology shall be maintained. No later than December 31, 1991,

the Secretary, acting through the NIST Director (Director), shall report to Congress on the results of the combination and on planned activities.

Subsection (h) provides that, notwithstanding any other provision of law, the NIST personnel management system, established as a demonstration project under section 10 of the NBS Authorization Act for FY 1987, shall become the permanent personnel management system for NIST. The Director shall carry out all repsonsibilities to execute and manage the personnel management system.

The Committee believes that the new NIST personnel management system has been very successful and should be continued beyond 5 years. Terminating the new system would cause great disruption and would limit severely the ability of NIST management to hire and retain high-quality scientists and engineers. The new system has helped NIST to make job offers much more quickly than in the past, and has given NIST much greater flexibility to retain as well as hire key personnel. At a time when Government salaries are lower than those in the private sector, and when Federal laboratories have a difficult time competing with private companies for skilled scientists and engineers, the new personnel system has made a major contribution to the quality and effectiveness of NIST's operations.

Subsection (i) amends the educational program provisions of the Act of March 3, 1901 (NIST organic act). In particular, the amendments provide that, for any scientific and engineering disciplines for which there is a shortage of suitably qualifed and available U.S. citizens and nationals, the Secretary is authorized to recruit and employ in scientific and engineering fields at NIST foreign nationals who have been admitted lawfully to the United States for permanent residence under the Immigration and Nationality Act and who intend to become U.S. citizens.

Sec. 105.—Extramural Programs of the Institute

Subseciton (a) provides authorizations for FY 1992 for NIST's extramural programs. In addition to any sums otherwise authorized under this legislation, there are authorized to be appropriated to the Secretary, to carry out NIST's extramural industrial technology services programs, $137,500,000 for FY 1992, which shall be available for the following line items:

(1) Manufacturing Technology Centers, $25,000,000;
(2) STEP, $2,500,000; and
(3) ATP, $110,000,000.

Subsection (b) states that, in addition to any sums otherwise authorized under this legislation there are authorized to be appropriated to the Secretary, to carry out NIST's extramural industrial technology services programs, $185,000,000 for FY 1933, which shall be available for the following line items:

(1) Manufacturing Technology Centers, $35,000,000;
(2) STEP, $10,000,000; and
(3) ATP, $140,000,000.

Subsection (c) stipulates that no funds are authorized under this section for any project under the extramural programs of NIST which have not been reviewed competitively through merit review processes.

NIST has implemented the new extramural programs created under the 1988 Omnibus Trade and Competitiveness Act. To date, NIST has run two competitions which resulted in the selection of five Regional Centers for the Transfer of Manufacturing Technology. NIST also has run its first competition under the STEP program and its first ATP competition.

Subsection (d) amends section 25 of the NIST organic act, the section that provides for support of the Manufacturing Technology Centers. It allows existing centers to receive contracts to provide additional services. It also revises section 25(d) to provide that the Secretary and Director may accept funds from other Federal funds to support Centers.

The Committee notes that, under the provisions of section 25, Federal support for a Manufacturing Technology Center expires at the end of 6 years. However, it is possible that NIST, as part of its continuing technology extension responsibilities, would find it cost-effective to contract with an existing Center to provide service in addition to the Center's core activities. The amendment makes clear that the Director may enter into such contracts.

Subsection (e) reauthorizes appropriations for the National Advisory Committee on Semiconductors.

Sec. 106.—Salary Adjustments

This section states that, in addition to any sums otherwise authorized by this legislation, there are authorized to be appropriated to the Secretary for FY 1992 and 1993 such additional sums as may be necessary to make any adjustments in salary, pay, retirement, and other employee benefits which may be provided by law.

Sec. 107.—Availability of Appropriations

This section provides that appropriations made under the authority provided in this legislation shall remain available for obligation, for expenditure, or for obligation and expenditure for periods specified in the Acts making such appropriations.

Sec. 108.—Report on Facilities Needs

This section states that, by March 1, 1992, the Director shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report on what renovations and upgrades of NIST facilities are necessary over the next decade. The report shall include a ranking of facilities needs in order of priority, an estimate of costs, and the Director's plan for meeting those needs.

Sec. 109.—Buy-American Provisions

Subsection (a) states that no contract or subcontract made with funds authorized under this legislation may be awarded for the procurement of an article, material, or supply produced or manufactured in a foreign country whose government unfairly maintains in government procurement a significant and persistent pattern or practice of discrimination against U.S. products or services which results in identifiable harms to U.S. businesses, as identified by the President pursuant to subsection (g)(1)(A) of section 305 of the

Trade Agreements Act of 1979. Any such determination shall be made in accordance with that section.

Subsection (b) states that if it has been finally determined by a court or a Federal agency that any person intentionally affixed a label bearing a "Made in America" inscription, or an inscription with the same meaning, to any product sold in or shipped to the United States that is not made in the United States, that person shall be ineligible to receive any contract or subcontract from DOC, pursuant to the debarment, suspension, and ineligibility procedures in subpart 9.4 of chapter 1 of title 48, CFR.

Subsection (c) states that the Secretary is authorized to award to a domestic firm a contract for the purchase of goods that, under the use of competitive procedures, would be awarded to a foreign firm, if the final product will be assembled in the United States, with more than 50 percent produced domestically, and if the difference between the bids submitted by the foreign and domestic firms is not more than 6 percent. However, this subsection shall not apply to the extent that the Secretary, the Secretary of Defense, or the President objects. This action shall apply only to contracts made for which amounts are authorized by this legislation to be made available and solicitations for bids are issued after the date of enactment of this legislation. Finally, the Secretary, before January 1, 1993, shall report to Congress on contracts covered under this subsection.

TITLE II—ADVANCED TECHNOLOGY PROGRAM AMENDMENTS

Sec. 201.—Emerging Technologies Research and Development

Subsection (a) provides that this title may be cited as the "Emerging Technologies and Advanced Technology Program Amendments Act of 1991."

Subsection (b) presents findings and purposes. Congress finds that—

(A) technological innovation and its profitable inclusion in commercial products are critical components of the ability of the United States to raise the living standards of Americans and to compete in world markets;

(B) maintaining viable U.S.-based high-technology industries is vital to both the national security and the economic well-being of the United States;

(C) DOC has reported that the United States is losing or losing badly, relative to Japan and Europe, in many important emerging technologies and risks losing much of the $350 billion U.S. market and $1 trillion world market expected to develop by the year 2000 for products based on emerging technologies;

(D) it is in the national interest for the Federal Government to encourage and, in selected cases, provide limited financial assistance to industry-led private-sector efforts to increase research and development in economically critical areas of technology;

(E) joint ventures are a particularly effective and appropriate way to pool resources to conduct research that no one company is likely to undertake but which will create new generic

technologies that will benefit an entire industry and the welfare of the Nation;

(F) it is vital that industry within the United States attains a leadership role and capability in development, design, and manufacturing in fields such as high-resolution information systems, advanced manufacturing, and advanced materials; and

(G) the ATP, established under section 28 of the NIST organic act, is the appropriate vehicle for the U.S. Government to provide limited assistance to joint development within the United States of new high-technology capabilities in fields such as high-resolution information systems, advanced manufacturing technology, and advanced materials, and can help encourage U.S. industry to work together on problems of mutual concern.

The purposes of this section are to strengthen the ATP; to provide improved guidelines for the allocation of ATP funds; to promote and assist in the development of advanced technologies and the generic application of such technologies to civilian products, processes, and services; to improve the competitive position of U.S. industry by supporting industry-led research and development projects; and to support projects that range from idea exploration to prototype development and address long-term, high-risk areas of technological research, development, and application that are not otherwise being developed adequately by the private sector, but are likely to yield important benefits to the Nation.

Subsection (c) amends section 28 of the NIST organic act. Section 28(a) is amended by adding at the end a new sentence which states that, in operating the ATP, the Secretary and Director, as appropriate, shall be guided by the findings and recommendations of the Biennial National Critical Technology Policy, Organization, and Priorities Act of 1976.

Section 28(b)(2) is amended to provide that the Secretary may provide grants to, and enter into contracts and cooperative agreements with, U.S. businesses (especially small businesses), provided that emphasis is placed on applying NIST's research, research techniques, and expertise to those organizations' research programs.

The Committee is aware of concerns by many small businesses regarding the way in which current ATP regulations deal with indirect cost issues. The Committee does not propose now to make any changes in the law, but expects that the NIST Director will review the concerns of these small businesses and will seek to develop ATP cost regulations which are consistent with Federal accounting practices but which do not unduly burden small firms.

Section 28(d)(2) is amended to provide that, in the case of joint ventures, the ATP shall not make an award unless the award will facilitate the formation of a joint venture or the initiation of a new research and development project by an existing joint venture.

Section 28(d)(7), which deals with recoupment, is repealed, and paragraphs (8) and (9) are numbered as paragraphs (7) and (8). The Committee agrees with DOC that the concept of recoupment presents serious administrative problems and is a significant deterrent to the participation of private companies in the ATP. Even without recoupment, the taxpayer still will receive benefits from the in-

creased economic activity and growth that the ATP will help to create.

Subsection (c) of this section of the reported bill also adds several new paragraphs to section 28(d). New paragraph (9) deals with which companies are eligible to apply to the ATP. A company shall be eligible to receive financial assistance under this section only if—

(A) the Secretary finds that the company's participation in the ATP would be in the economic interest of the United States, as evidenced by investments in the United States in research, development, and manufacturing (including, for example, the manufacture of major components or subassemblies in the United States); significant contributions to employment in the United States; and agreement with respect to any technology arising from assistance provided under this section to promote the manufacture within the United States of products resulting from that technology (taking into account the goals of promoting the competitiveness of U.S. industry), and to procure parts and materials from competitive suppliers; and

(B) either—

(i) the company is a U.S.-owned company; or

(ii) the Secretary finds that the company is incorporated in the United States and has a parent company which is incorporated in a country which affords to U.S.-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized under this legislation; affords to U.S.-owned companies local investment opportunities comparable to those afforded to any other company; and affords adequate and effective protection for the intellectual property rights of U.S.-owned companies.

The Committee strongly believes that companies, both American-owned and foreign, should meet certain minimal conditions in order to be eligible to apply for taxpayer-funded ATP moneys. New paragraph (9) sets forth those conditions. The first group of conditions, under subparagraph (A), applies to all companies. The second group of conditions, under subparagraph (B)(ii), applies to U.S.-incorporated, foreign-owned companies. (The term "foreign-owned" is defined in a later part of section 28). The Committee believes that a foreign-owned company should not be eligible to apply to DOC's taxpayer-supported programs unless the foreign company's home country offers basic reciprocity, in the form of similar access for American firms to its government-supported research programs, national treatment in investment, and intellectual property protection. However, the Committee also believes that if a foreign company meets the criteria set forth in new paragraph (9), then its participation in ATP-supported programs may be to the benefit of the United States. The reported bill's conditions for the eligibility of U.S.-incorporated, foreign-owned companies to participate in the ATP are consistent with the ATP's goal to promote both the competitiveness of companies located within the United States and the welfare of the Americans employed at those companies.

The Secretary shall determine whether a particular company meets or does not meet these criteria. The burden of proof for es-

tablishing whether a given company meets these criteria must be borne by the company that wishes to be eligible to apply for ATP funding. For example, if a company believes that it is U.S.-owned as opposed to foreign-owned, the company must present evidence which satisfies the Secretary. Similarly, if a foreign-owned company wishes the Secretary to certify that it meets the conditions set forth in subparagraph (B)(ii), then the company bears the burden of proof. The Committee believes that a company should have the opportunity to ask the Secretary to determine its eligibility and should be entitled to a written reply.

If a proposed or existing joint venture contains one or more foreign-owned companies and requests ATP assistance, or if a joint venture which already receives ATP funding wishes to add one or more foreign-owned companies, then the Secretary must approve the participation of each such foreign company, using the criteria set forth in new paragraph (9).

The conditions set forth in new paragraph (9) apply only to the ATP. These conditions in no way restrict the ability of any company which has received an ATP award or which belongs to a joint venture which has won such an award to enter into an alliance or research project with any other firm, including firms not eligible to apply for ATP funding, provided that the alliance or research project is different and separate from the research project receiving ATP funding.

New paragraph (10) states that grants, contracts, and cooperative agreements under section 28 shall be designed to support projects which are high-risk and which have the potential for eventual substantial widespread commercial application. In order to receive a grant, contract, or cooperative agreement under this section, a research and development entity shall demonstrate to the Secretary the requisite ability in research and technology development and management in the project area in which the grant, contract, or cooperative agreement is being sought.

New paragraph (11) provides that title to any intellectual property arising from assistance provided under section 28 shall vest in a company or companies incorporated in the United States. The United States may reserve a nonexclusive, nontransferable, irrevocable paid-up license, to have practiced for or on behalf of the United States, in connection with any such intellectual property, but shall not, in the exercise of such license, publicly disclose proprietary information related to the license. Title to any such intellectual property shall not be transferred or passed, except to a company incorporated in the United States, until the expiration of the first patent obtained in connection with such intellectual property. Nothing in new paragraph (11) shall be construed to prohibit the licensing to any company of intellectual property rights arising form assistance provided under section 28.

Section 28(e) is amended to provide that the Secretary, within 30 days after notice to Congress, may suspend a company or joint venture from continued assistance under section 28 if the Secretary determines that the company, the country of incorporation of the company or a parent company, or the joint venture has failed to satisfy any of the criteria set forth in section 28(d)(9), and that it is in the national interest of the United States to do so.

The Committee intends that a company or joint venture shall be suspended from receiving further ATP funding if the company, its home country, or the joint venture itself violates any of the criteria under new paragraph (9). Starting at the date on which the violation began, the Secretary shall recover any ATP funds awarded to such a company or joint venture.

Subsection (c) of this section of the reported bill also adds five new subsections to section 28. New subsection (f) provides that, when reviewing private-sector requests for awards under the ATP, and when monitoring the progress of assisted research projects, the Secretary and the director, as appropriate, shall coordinate with the Secretary of Defense and other senior Federal officials to ensure cooperation and coordination in Federal technology programs and to avoid unnecessary duplication of effort. The Secretary and the Director are authorized to work with the Director of the Office of Science and Technology Policy (OSTP), the Secretary of Defense, and other appropriate Federal officials to form interagency working groups or special project offices to coordinate Federal technology activities.

New subsection (g) states that in order to analyze the need for the value of joint ventures and other research projects in specific technical fields, to evaluate any proposal made by a joint venture or company requesting the Secretary's assistance, or to monitor the progress of any joint venture or any company research project which receives Federal funds under the ATP, the Secretary, the Under Secretary, and the Director, notwithstanding any other provision of law, may meet with such industry sources as they consider useful and appropriate.

New subsection (h) provides that up to 10 percent of the funds appropriated for carrying out section 28 may be used for standards development and technical activities by NIST in support of the purposes of section 28.

New subsection (i) states that, in addition to such sums as may be authorized and appropriated to the Secretary and Director to operate the ATP, the Secretary and Director also may accept funds form other Federal Departments and Agencies for the purpose of providing Federal funds to support awards under the ATP. Any APT award which is supported with funds that originally came from other Federal Departments and Agencies shall be selected and carried out according to the provisions of section 28.

New subsection (j) provides definitions of the terms joint venture, U.S.-owned company, and foreign-owned company.

Subsection (d) of this section of the reported bill states that the amendments in subsection (c) of this section shall take effect immediately upon enactment; however, those amendments shall not apply to applications submitted in response to any Federal Register Invitation for Proposals dated prior to the date of enactment of this legislation, or awards or other assistance granted pursuant to that notice.

The Committee does not intend that subsection (c) of this section of the reported bill overturn or otherwise conflict with the eligibility criteria set forth in section 105 of the Commerce, Justice, State, and the Judiciary Appropriations Act for Fiscal year 1991 (Pub. Law 101-515). That Act contains company eligibility criteria for FY

1991 ATP funds that are nearly identical to the criteria set forth in new section 28(d)(9). Those criteria govern eligibility for any company which seeks to apply for FY 1991 ATP funding. By contract, the criteria set forth in this legislation do not apply to applications for ATP awards submitted in response to Federal Register notices issued prior to the date of enactment of this legislation bill. Accordingly, as a practical matter, the eligibility criteria in this legislation bill will not apply to the FY 1991 awards covered by the criteria in the Appropriations Act.

Subsection (e) of this section of the reported bill amends section 2 of the NIST organic act to provide that, in carrying out the extramural funding programs of NIST, including the programs established under sections 25, 26, and 28 of that Act, the Secretary may retain reasonable amounts of any funds appropriated pursuant to authorizations for these programs in order to pay for NIST's management of these programs.

Subsection (f) of this section of the reported bill states that the Secretary, not later than 4 years after the date of enactment of this legislation, shall submit to the Senate and the House and the President to comprehensive report on the results of the ATP, including activities in the areas of high-resolution information systems, advanced manufacturing technology, and advanced materials.

Subsection (g) of this section states that DOC reports on the Sematech consortium, after the date of enactment of this legislation, shall be written by the Under Secretary for Technology instead of the Under Secretary for Economic Affairs. When Sematech was created in the mid-1980s, the position of Under Secretary for Technology did not yet exist. What was then the Office of Productivity, Technology, and Innovation reported to the Under Secretary for Economic Affairs, and the task of preparing DOC analyses was assigned to that Under Secretary. The Under Secretary for Technology is now the appropriate official to perform this task.

TITLE III—AMENDMENTS TO THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

Sec. 301.—Federal Laboratory Consortium

This section reauthorizes funding for the Federal Laboratory Consortium (FLC) for Technology Transfer through FY 1996. The FLC consists of technology transfer officials from major Federal laboratories. It provides a communications network by which one laboratory can refer interested companies and individuals to other laboratories. It also provides training for technology transfer officials and serves as a forum in which these officials can meet and discuss technology transfer mechanisms. The FLC is funded by a small set-aside levied on the laboratory budgets of large Federal research agencies. The Committee believes that the FLC continues to serve important functions and that its funding should be continued for another 5 years. The Committee urges laboratory directors to take an active role in the FLC, so as to ensure that it fully meets the training needs and other needs of the laboratories.

Sec. 302.—Cooperative Research and Development Agreements

This section amends section 12 of the Stevenson-Wydler Act, which allows Government-operated Federal laboratories to enter into cooperative research and development agreements with companies and other partners. Subsection (a) clarifies intellectual property provisions. Subsection (b) directs the Secretary to report to Congress on the advisability of authorizing a new form of cooperative research and development agreement which would permit Federal contributions of funds.

Sec. 303.—Definition of Federal Agency

This section allows a laboratory in the legislative branch of the Federal Government to enter into cooperative research and development agreements. The Library of Congress has experts in book restoration and other technologies. These experts at some point might invent and patent new technologies that would be of interest to private companies. Therefore, the Committee believes that the provisions of the Stevenson-Wydler Act, as amended by the Federal Technology Transfer Act of 1986, should be extended to legislative branch inventions and inventors.

Sec. 304.—Quality Improvement

This section clarifies the Director's authority to use appropriated funds to help carry out the Malcolm Baldridge National Quality Award Program. While the Baldridge Award Program is primarily privately funded, this amendment clarifies the authority of the Director to use appropriated funds to pay the salaries of NIST employees involved in the program and to pay for related NIST expenses.

Sec. 305.—Under Secretary

This section amends the Stevenson-Wydler Act to state that one duty of the Under Secretary is to serve as a focal point for discussion among U.S. companies, trade associations, and labor unions on topics of interest to industry and labor, including discussions regarding issues of manufacturing and emerging technologies.

TITLE IV—STUDIES AND REPORTS

Sec. 401.—High-Resolution Information Systems Advisory Board

This section directs the OSTP Director to establish within OSTP a High-Resolution Information Systems Advisory Board (Board) to monitor and, as appropriate, foster the development of U.S.-based high-resolution information system industries.

The Board shall collect and analyze information on the range of factors which will determine whether U.S.-based high-resolution systems industries will develop and become competitive; identify areas where appropriate cooperation between the Federal Government and the private sector would enhance U.S. industrial competitiveness in this area; provide guidance on what Federal policies and practices, particularly in such areas as procurement and the transfer of federally funded research, are necessary to help establish U.S.-based high-resolution systems industries; provide advice on the coordination of Federal defense and civilian activities to

maximize and assist with the transfer of technologies in the field of high-resolution systems into commercial products; and generally develop recommendations for guiding Federal agency activities related to the development of U.S.-based high-resolution systems industries.

The Board shall be composed of 13 members, 7 of whom shall constitute a quorum. The OSTP Director, the Secretary, the Director of the Defense Advanced Research Projects Agency, and the Administrator of the National Aeronautics and Space Administration, or their designees, shall serve as members of the Board. The President, acting through the OSTP Director, shall appoint nine private-sector members. The OSTP Director or the Director's designee shall chair the Board. There are authorized to be appropriated to carry out this section such sums as may be necessary for FY 1992 and 1993.

The Board is based on a similar advisory group created to provide advice and information on the semiconductor industry, the National Advisory Committee on Semiconductors (NACS). NACS appears to have been a successful and useful forum for bringing Government and business officials together to analyze long-term trends and possible policy options for that industry. Since high-resolution information systems may revolutionize many fields, including computers, consumer electronics, computer-integrated design and manufacturing, and defense systems, and since policy issues are likely to arise in such areas as R&D and industry standards, an industry-government advisory board also appears appropriate for this industry.

Sec. 402.—Major Science and Technology Proposals

This section adds a new section 209 to the National Science and Technology Policy, Organization, and Priorities Act of 1976. The new section states that the OSTP Director shall monitor and report annually to Congress on each major science and technology project in which more than one country is participating and which has a total estimated cost greater than $1 billion.

Sec. 403.—Biennial National Critical Technologies Report Amendments

This section amends section 603(a) of the National Science and Technology Policy, Organization, and Priorities Act of 1976 to direct the National Critical Technologies Panel (Panel) to include an examination of economically important emerging civilian technologies in its biennial critical technologies reports. The section also directs the Panel to identify the types of research and development needed to close any significant gaps of deficiencies in the technology base of the United States, as compared with the technology bases of major trading partners, and to provide a list of the technologies and markets targeted by major trading partners for development or capture.

Sec. 404.—Research, Development, Technology Utilization, and Government Procurement Policy

This section directs the Secretary, in consultation with the Administrator of the Office of Federal Procurement Policy, to estab-

lish a Commission on Technology and Procurement (Commission) for the purposes of analyzing the effect of Federal Government procurement laws, procedures, and policies on the development of advanced technologies within the United States and making recommendations on how Federal policy could be changed to promote further the development of advanced technologies.

The Commission shall be composed of 15 members, 8 of whom shall constitute a quorum. The Secretary, the Administrator of the Office of Federal Procurement Policy, the OSTP Director, the Secretary of Defense, and the Administrator of General Services, or their designees who serve in executive-level positions, shall serve as members of the Commission. The Secretary shall appoint 10 private sector members. The Secretary also shall appoint a Commission chairperson from among the members of the Commission. The Chair shall call the first meeting of the Commission within 90 days after the date of enactment of this legislation.

The Commission, within 1 year after the date of enactment of this legislation, shall submit to the Secretary, the Administrator of the Office of Federal Procurement Policy, the President, and Congress a report containing preliminary recommendations. The Commission, within 2 years after the date of enactment of this legislation, shall submit to the Secretary and Congress a final report containing final recommendations.

Sec. 405.—Report on Information Collection and Dissemination

Subsection (a) directs the Secretary to report, within 270 days after the date of enactment of this legislation, to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives on the feasibility of establishing and operating a Federal Online Information Product Catalog (FEDLINE) at NTIS which would serve as a comprehensive inventory and authoritative register of information products and services disseminated by the Federal Government and assist agencies and the public in locating Federal Government information. Information protected from public disclosure shall not be included in FEDLINE. In studying the concept, the Secretary, acting through the Under Secretary and the NTIS Director, shall consult with officials from appropriate Government agencies. Such report shall contain cost estimates and possible funding sources for establishing and operating FEDLINE and shall list any changes in law and regulation that would be required if FEDLINE were to be implemented.

Subsection (b) stipulates that the NTIS Director may retain and use all moneys received, including receipts, revenues, and advanced payments and deposits, to fund obligations and expenses, including capital equipment and inventory, through the end of FY 1993.

Subsection (c) amends the National Technical Information Act of 1988 to allow NTIS to produce and disseminate information products in electronic format.

Sec. 406.—Study of Testing and Certification

Subsection (a) states that, within 90 days after the date of enactment of this legislation and within available appropriations, the Secretary shall enter into a contract with the National Research

Council for a thorough review of international product testing and certification issues. The study shall address the following issues and make recommendations as appropriate:

(1) the impact on U.S. manufacturers, testing and certification laboratories, certification organizations, and other affected bodies of the European Community's plans for testing and certification of regulated and nonregulated products of non-European origin;

(2) ways for U.S. manufacturers to gain acceptance of their products in the European Community and in other foreign countries and regions;

(3) the feasibility and consequences of having mutual recognition agreements between testing and certification organizations in the United States and those of major trading partners on the accreditation of testing and certification laboratories and on quality control requirements;

(4) information coordination regarding product acceptance and conformity assessment mechanisms between the United States and foreign governments; and

(5) the appropriate Federal, State, and private roles in coordination and oversight of testing, certification, accreditation, and quality control to support national and international trade.

Subsection (b) provides that, in selecting the members of the review panel, the National Research Council shall consult with and draw from, among others, laboratory accreditation laboratories and organizations, Federal and State government agencies involved in testing and certification, professional societies, trade associations, small business, and labor organizations.

Subsection (c) requires that a report based on the findings and recommendations of the review panel shall be submitted to the Secretary, the President, and Congress within 18 months after the Secretary signs the contract with the National Research Council.

The traditional U.S. process for testing products and certifying that they meet specified standards has served well the domestic American market. However, recent developments in the world economy have raised new questions. For example, American companies, particularly small firms, would like to test their products in the United States and then sell them in the new European single market without being required to retest those products within Europe. The European Community appears open to this proposal, but in return may want changes in the U.S. domestic testing and certification process to ensure that those American-made products indeed meet European Community standards. What types of changes in the domestic system would be necessary or reasonable? How might they be accommodated within America's decentralized system for testing and certifying products? These are important questions, and an in-depth analysis of them would be beneficial.

Sec. 407.—Report on a Strategy To Stimulate Competitive Research

Subsection (a) directs that, not later than 120 days after the date of enactment of this legislation, the OSTP Director shall submit to

Congress a report presenting a proposed strategy for improving the university research capabilities of those States which historically have received relatively little Federal research and development funding. The report shall discuss particularly recent steps by other agencies to use the National Science Foundation's (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) as a model and the feasibility and advisability of using this program as a model in research agencies which currently do not have similar programs.

Subsection (b) states that the report shall include an analysis and discussion of the geographic distribution of Federal research and development grants and contracts; current Federal efforts to stimulate competitive research; and the feasibility and advisability of new Federal programs to stimulate competitive research.

Over the years, the Committee has strongly supported NSF's EPSCoR program. It has encouraged and assisted States which traditionally have received relatively little NSF funding to build areas of research excellence within their universities and colleges. The Committee continues to believe that other Federal agencies might successfully use a similar approach to build research excellence throughout the country. Section 407 therefore requests an analysis by the OSTP Director.

Sec. 408.—Interagency coordination

This section states that the Secretary, within 180 days after the date of enactment of this legislation, shall submit to the Committee on Commerce, Science, and Transportation of the Senate, and to the Committee on Science, Space, and Technology and the Committee on Energy and Commerce of the House of Representatives, a plan for coordination of DOC efforts with other Federal agencies for activities related to high-resolution information systems, including research and development activities.

Changes in Existing Law

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

Act of March 3, 1901

Section 2 of that Act

ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES

Sec. 2. (a) through (c) * * *

(d) In carrying out the extramural funding programs of the Institute, including the programs established under sections 25, 26, and 28 of this Act, the Secretary may retain reasonable amounts of any funds appropriated pursuant to authorizations for these programs in order to pay for the Institute's management of these programs.

Section 14 of that Act

CONSTRUCTION AND IMPROVEMENT OF BUILDINGS AND FACILITIES

SEC. 14. Within the limits of funds which are appropriated for the Institute, the Secretary of Commerce is authorized to undertake such construction of buildings and other facilities and to make such improvements to existing buildings, grounds, and other facilities occupied or used by the Institute as are necessary for the proper and efficient conduct of the activities authorized [herein: Provided, That no improvement shall be made nor shall any building be constructed under this authority at a cost in excess of $250,000 unless specific provision is made therefor in the appropriation concerned.] *herein.*

Section 17 of that Act

INTERNATIONAL ACTIVITIES

SEC. 17. (a) through (c) * * *

(d) For any scientific and engineering disciplines for which there is a shortage of suitably qualified and available United States citizens and nationals, the Secretary is authorized to recruit and employ in scientific and engineering fields at the Institute foreign nationals who have been lawfully admitted to the United States for permanent residence under the Immigration and Nationality Act and who intend to become United States citizens. Employment of a person under this subsection shall not be subject to the provisions of title 5, United States Code, governing employment in the competitive service, or to any prohibition in any other Act against the employment of aliens, or against the payment of compensation to them.

Section 18 of that Act

FINANCIAL ASSISTANCE TO CURRENT AND PROSPECTIVE EMPLOYEES

SEC. 18. The Director is authorized to expend up to 1 per centum of the funds appropriated for activities of the Institute in any fiscal year, as the Director may deem desirable, for awards of research fellowships and other forms of financial assistance to students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the Institute[.], *and to United States citizens for research and technical activities on Institute programs.* The selection of persons to receive such fellowships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

Section 25 of that Act

REGIONAL CENTERS FOR THE TRANSFER OF MANUFACTURING TECHNOLOGY

SEC. 25. (a) through (b) * * *

(c) (1) through (4) * * *

(5) Each Center which receives financial assistance under this section shall be evaluated during its third year of operation by an

evaluation panel appointed by the Secretary. Each such evaluation panel shall be composed of private experts, none of whom shall be connected with the involved Center, and Federal officials. An official of the Institute shall chair the panel. Each evaluation panel shall measure the involved Center's performance against the objectives specified in this section. The Secretary shall not provide funding for the fourth through the sixth years of such Center's operation unless the evaluation is positive. If the evaluation is positive, the Secretary may provide continued funding through the sixth year at declining levels, which are designed to ensure that the Center no longer needs financial support from the Institute by the seventh year. In no event shall funding for a Center be provided by the Department of Commerce after the sixth year of the operation of a Center, *except for contracts for such specific technology extension or transfer services as may be specified by statute or by the Director.*

(6) * * *

[(d) There are authorized to be appropriated for the purposes of carrying out this section, a combined total of not to exceed $40,000,000 for fiscal years 1989 and 1990. Such sums shall remain available until expended.]

(d) In addition to such sums as may be authorized and appropriated to the Secretary and Director to operate the Center's program, the Secretary and Director also may accept funds from other Federal departments and agencies for the purpose of providing Federal funds to support Centers. Any Center which is supported with funds which originally came from other Federal departments and agencies shall be selected and operated according to the provisions of this section.

Section 28 of that Act

ADVANCED TECHNOLOGY PROGRAM

SEC. 28. (a) There is established in the Institute an Advanced Technology Program (hereafter in this Act referred to as the "Program") for the purpose of assisting United States businesses in creating and applying the generic technology and research results necessary to—

(1) commercialize significant new scientific discoveries and technologies rapidly; and

(2) refine manufacturing technologies.

The Secretary, acting through the Director, shall assure that the Program focuses on improving the competitive position of the United States and its businesses, gives preference to discoveries and to technologies that have great economic potential, and avoids providing undue advantage to specific companies. *In operating the Program, the Secretary and Director shall, as appropriate, be guided by the findings and recommendations of the Biennial National Critical Technology Reports prepared pursuant to section 603 of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6683).*

(b) Under the Program established in subsection (a), and consistent with the mission and policies of the Institute, the Secretary,

acting through the Director, and subject to subsections (c) and (d), may—

(1) aid *industry-led* United States joint research and development ventures (hereafter in this section referred to as "joint ventures" (which may also include universities and independent research organizations), including those involving collaborative technology demonstration projects which develop and test prototype equipment and processes, through—

(A) provision of organizational and technical advice; and

(B) participation in such joint ventures, if the Secretary, acting through the Director, determines participation to be appropriate, which may include (i) partial start-up funding, (ii) provision of a minority share of the cost of such joint ventures *by means of grants, cooperative agreements, or contracts* for up to 5 years, and (iii) making available equipment, facilities, and personnel, provided that emphasis is placed on areas where the Institute has scientific or technological expertise, on solving generic problems of specific industries, and on making those industries more competitive in world markets;

[(2) enter into contracts and cooperative agreements with United States businesses, especially small businesses, and with independent research organizations, provided that emphasis is placed on applying the Institute's research, research techniques, and expertise to those organizations' research programs;]

(2) provide grants to and enter into contracts and cooperative agreements with United States businesses (especially small businesses), provided that emphasis is placed on applying the Institute's research, research techniques, and expertise to those organiztions' research programs;

(3) through (4) * * *

(c) * * *

(d) When entering into contracts or making awards under subsection (b), the following shall apply:

(1) * * *

[(2) In the case of joint ventures, the Program shall not make an award unless, in the judgment of the Secretary, acting through the Director, Federal aid is needed if the industry in question is to form a joint venture quickly.]

(2) In the case of joint ventures, the Program shall not make an award unless the award will facilitate the formation of a joint venture or the initiation of a new research and development project by an existing joint venture.

(3) through (6) * * *

[(7) The Federal Government shall be entitled to a share of the licensing fees and royalty payments made to and retained by any business or joint venture to which it contributes under this section in an amount proportional to the Federal share of the costs incurred by the business or joint venture as determined by independent audit.]

[(8)]*(7)* If a business or joint venture fails before the completion of the period for which a contract or award has been made, after all allowable costs have been paid and appropriate

audits conducted, the unspent balance of the Federal funds shall be returned by the recipient to the Program.

[(9)] *(8)* Upon dissolution of any joint venture or at the time otherwise agreed upon, the Federal Government shall be entitled to a share of the residual assets of the joint venture proportional to the Federal share of the costs of the joint venture as determined by independent audit.

(9) A company shall be eligible to receive financial assistance under this section only if—

(A) the Secretary finds that the company's participation in the Program would be in the economic interest of the United States, as evidenced by investments in the United States in research, development, and manufacturing (including, for example, the manufacture of major components or subassemblies in the United States); significant contributions to employment in the United States; and agreement with respect to any technology arising from assistance provided under this section to promote the manufacture within the United States of products resulting from that technology (taking into account the goals of promoting the competitiveness of United States industry), and to procure parts and materials from competitive suppliers; and

(B) either—

(i) the company is a United States-owned company; or

(ii) the Secretary finds that the company is incorporated in the United States and has a parent company which is incorporated in a country which affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized under this Act; affords to United States-owned companies local investment opportunities comparable to those afforded to any other company; and affords adequate and effective protection for the intellectual property rights of United States-owned companies.

(10) Grants, contracts, and cooperative agreements under this section shall be designed to support projects which are high risk and which have the potential for eventual substantial widespread commercial application. In order to receive a grant, contract, or cooperative agreement under this section, a research and development entity shall demonstrate to the Secretary the requisite ability in research and technology development and management in the project area in which the grant, contract, or cooperative agreement is being sought.

(11)(A) Title to any intellectual property arising from assistance provided under this section shall vest in a company or companies incorporated in the United States. The United States may reserve a nonexclusive, nontransferable, irrevocable paid-up license, to have practiced for or on behalf of the United States, in connection, with any such intellectual property, but shall not, in the exercise of such license, publicly disclose proprietary information related to the license. Title to any such intellectual property shall not be transferred or passed, except to a company

incorporated in the United States, until the expiration of the first patent obtained in connection with such intellectual property.

(B) For purposes of this paragraph, the term "intellectual property" means an invention patentable under title 35, United States Code, or any patent on such an invention.

(C) Nothing in this paragraph shall be construed to prohibit the licensing to any company of intellectual property rights arising from assistance provided under this section.

[(e) As used in this section, the term "joint research and development venture" has the meaning given to such term in section 2(a)(6) of the National Cooperative Research Act of 1984 (15 U.S.C. 4301(a)(6)).]

(e) The Secretary may, within 30 days after notice to Congress, suspend a company or joint venture from continued assistance under this section if the Secretary determines that the company, the country of incorporation of the company or a parent company, or the joint venture has failed to satisfy any of the criteria set forth in subsection (d)(9), and that it is in the national interest of the United States to do so.

(f) When reviewing private sector requests for awards under the Program, and when monitoring the progress of assisted research projects, the Secretary and the Director shall, as appropriate, coordinate with the Secretary of Defense and other senior Federal officials to ensure cooperation and coordination in Federal technology programs and to avoid unnecessary duplication of effort. The Secretary and the Director are authorized to work with the Director of the Office of Science and Technology Policy, the Secretary of Defense, and other appropriate Federal officials to form interagency working groups or special project offices to coordinate Federal technology activities.

(g) In order to analyze the need for the value of joint ventures and other research projects in specific technical fields, to evaluate any proposal made by a joint venture or company requesting the Secretary's assistance, or to monitor the progress of any joint venture or any company research project which receives Federal funds under the Program, the Secretary, the Under Secretary of Commerce for Technology, and the Director may, notwithstanding any other provision of law, meet with such industry sources as they consider useful and appropriate.

"(h) Up to 10 percent of the funds appropriated for carrying out this section may be used for standards development and technical activities by the Institute in support of the purposes of this section.

"(i) In addition to such sums as may be authorized and appropriated to the Secretary and Director to operate the Program, the Secretary and Director also may accept funds from other Federal departments and agencies for the purpose of providing Federal funds to support awards under the Program. Any Program award which is supported with funds which originally came from other Federal departments and agencies shall be selected and carried out according to the provisions of this section.

(j) As used in this section—

(1) the term "joint venture" means any group of activities, including attempting to make, making, or performing a contract, by two or more persons for the purpose of—

(A) theoretical analysis, experimentation, or systematic study of phenomena or observable facts;

(B) the development or testing of basic engineering techniques;

(C) the extension of investigative finding or theory of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, prototypes, equipment, materials, and processes;

(D) the collection, exchange, and analysis of research information;

(E) the production of any product, process, or service; or

(F) any combination of the purposes specified in subparagraphs (A), (B), (C), (D), and (E), and may include the establishment and operation of facilities for the conducting of research, the conducting of such venture on a protected and proprietary basis, and the prosecuting of applications for patents and the granting of licenses for the results of such venture;

(2) the term "United States-owned company" means a company that has majority ownership or control by individuals who are citizens of the United States; and

(3) the term "foreign-owned company" means a company other than a United States-owned company.

STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

Section 4 of that Act

SEC. 4. DEFINITIONS.—As used in this Act, unless the context otherwise requires, the term—

(1) through (7) * * *

(8) "Federal agency" means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined in section 102 of such title, *as well as any agency of the legislative branch of the Federal Government.*

(9) through (13) * * *

Section 5 of that Act

SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.—(a) through (b) * * *

(c) DUTIES.—The Secretary, through the Under Secretary, as appropriate, shall—

(1) through (12) * * *

(13) serve as a focal point for discussions among United States companies, trade associations, and labor unions on topics of interest to industry and labor, including discussions regarding issues of manufacturing and emerging technologies;

[(13)**]** *(14)* consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin; and

[(14)] *(15)* publish the results of studies and policy experiments.

(d) through (e) * * *

Section 11 of that Act

SEC. 11. UTILIZATION OF FEDERAL TECHNOLOGY.—(a) through (d) * * *

(e) ESTABLISHMENT OF FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER.—(1) * * *

(2) through (6) * * *

(7)(A) Subject to subparagraph (B), an amount equal to 0.008 percent of the budget of each Federal agency from any Federal source, including related overhead, that is to be utilized by or on behalf of the laboratories of such agency for a fiscal year referred to in subparagraph (B)(ii) shall be transferred by such agency to the National Institute of Standards and Technology at the beginning of the fiscal year involved. Amounts so transferred shall be provided by the Institute to the Consortium for the purpose of carrying out activities of the Consortium under this subsection.

(B) A transfer shall be made by any Federal agency under subparagraph (A), for any fiscal year, only if—

(i) the amount so transferred by that agency (as determined under such subparagraph) would exceed $10,000; and

(ii) such transfer is made with respect to the fiscal year [1987, 1988, 1989, 1990, or 1991] *1991, 1992, 1993, 1994, 1995, or 1996.*

(C) The heads of Federal agencies and their designees, and the directors of Federal laboratories, may provide such additional support for operations of the Consortium as they deem appropriate.

(8) * * *

(f) through (g) * * *

Section 12 of that Act

SEC. 12. COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS.—(a) through (c) * * *

(d) DEFINITION.—As used in this section—

(1) the term "cooperative research and development agreement" means any agreement between one or more Federal laboratories and one or more non-Federal parties under which the Government, through its laboratories, provides personnel, services, facilities, equipment, *intellectual property,* or other resources with or without reimbursement (but not funds to non-Federal parties) and the non-Federal parties provide funds, pesonnel, services, facilities, equipment, *intellectual property,* or other resources toward the conduct of specified research or development efforts which are consistent with the missions of the laboratory; except that such term does not include a procurement contract or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of title 31, United States Code;

(2) through (3) * * *

(e) through (g) * * *

Section 17 of that Act

SEC. 17. MALCOLM BALDRIGE NATIONAL QUALITY AWARD.—(a) THOUGH (e) * * *

(f) FUNDING.—The Secretary is authorized to seek and accept gifts from public and private sources to carry out the program under this section. If additional sums are needed to cover the full cost of the program, the Secretary shall impose fees upon the organizations applying for the award in amounts sufficient to provide such additional sums. *The Director is authorized to use appropriated funds to carry out responsibilities under this Act.*

(g) * * *

NATIONAL TECHNICAL INFORMATION ACT OF 1988

Section 212 of that Act

SEC. 212. NATIONAL TECHNICAL INFORMATION SERVICE.—(a) through (e) * * *

(e) FUNCTIONS.—The Secretary of Commerce, acting through the Service, shall—

(1) through (4) * * *

(5) implement new methods or media for the dissemination of scientific, technical, and engineering information, *including the production and dissemination of information products in electronic format*; and

(6) * * *

(f) * * *

NATIONAL SCIENCE AND TECHNOLOGY POLICY, ORGANIZATION, AND PRIORITIES ACT OF 1976

Title II of that Act

TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SECS. 201 through 208 * * *

MAJOR SCIENCE AND TECHNOLOGY PROPOSALS

SEC. 209. The Director shall identify and provide an annual report to Congress on each major multinational science and technology project, in which the United States is not a participant, which has a total estimated cost greater than $1,000,000,000.

Section 603 of that Act

BIENNIAL NATIONAL CRITICAL TECHNOLOGIES REPORT

SEC. 603. (a) The panel shall submit to the President a biennial report on national critical technologies. Each such report shall identify those product technologies and process technologies that the panel considers to be national critical technologies. The number of such technologies identified in any such report may not exceed 30, *but shall include the most economically important emerging civilian technologies during the 10-year period following*

such report, together with the estimated current and future size of domestic and international markets for products derived from those emerging civilian technologies. The reports shall be submitted not later than October 1 of even-numbered years.

(b) For purposes of subsection (a), a product or process technology may be considered to be a national critical technology if the panel determines it to be a technology that it is essential for the United States to develop to further the long-term [national security and] *national security or* economic prosperity of the United States.

(c) * * *

(d) Each such report shall include—

(1) an identification of the types of research and development needed to close any significant gaps or deficiencies in the technology base of the United States, as compared with the technology bases of major trading partners; and

(2) a list of the technologies and markets targeted by major trading partners for development or capture.

[(d)] *(e)* Not later than 30 days after the date on which a report is submitted to the President under this section, the President shall transmit the report, together with any comments that the President considers appropriate, to Congress.

OMNIBUS TRADE AND COMPETITIVENESS ACT OF 1988

Section 5121 of that Act

SEC. 5121. TECHNOLOGY EXTENSION ACTIVITIES.—(a) * * *

(b) TECHNOLOGY EXTENSION SERVICES.—(1) * * *

(2) through (4) * * *

[(5) Cooperative agreements entered into under paragraph (2) shall terminate no later than September 30, 1991.]

(c) * * *

Section 5142 of that Act

SEC. 5142. SEMICONDUCTOR RESEARCH AND DEVELOPMENT.—(a) through (e) * * *

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out the purposes of this section such sums as may be necessary for the fiscal years 1988, 1989, [and 1990] *1990, 1991, 1992, and 1993.*

Section 5422 of that Act

SEC. 5422. STUDY AND REPORT BY THE ADVISORY COUNCIL ON FEDERAL PARTICIPATION IN SEMATECH.—(a) STUDY AND REPORT.—Not later than February 1, 1989, and annually thereafter for each fiscal year in which appropriated funds are expended for Sematech the Advisory Council on Federal Participation in Sematech established under section 273(a) of the National Defense Authorization Act for fiscal years 1988 and 1989 (15 U.S.C. 4603(a); Public Law 100-180) shall conduct a study and submit a report to the Governmental Affairs Committee and the Armed Services Committee of the Senate and to appropriate committees of the House of Representatives concerning Federal participation in Sematech. The study and report

shall be conducted under the direction of the Under Secretary of Commerce for [Economic Affairs] *Technology*.

(b) * * *

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1988 AND 1989

Section 273 of that Act

SEC. 273. ADVISORY COUNCIL.—(a) through (b) * * *

(c) MEMBERSHIP.—The Council shall be composed of 12 members as follows:

(1) The Under Secretary of Defense for Acquisition, who shall be Chairman of the Council.

(2) The Director of Energy Research of the Department of Energy.

(3) The Director of the National Science Foundation.

(4) The Under Secretary of Commerce for [Economic Affairs] *Technology*.

(5) The Chairman of the Federal Laboratory Consortium for Technology Transfer.

(6) Seven members appointed by the President as follows:

(A) Four members who are eminent individuals in the semiconductor industry and related industries.

(B) Two members who are eminent individuals in the fields of technology and defense.

(C) One member who represents small businesses.

(d) through (i) * * *

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